

## SEQUENCE LISTING

<110> Vanderbilt University  
 Case Western Reserve University  
 Mount, David B  
 Romero, Michael  
 <120> CLONING AND CHARACTERIZATION OF SLC26A7 and SLC26A9 ANION  
 EXCHANGERS  
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 <150> US 60/360,287  
 <151> 2002-02-28  
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20          25          30

Pro Ile Leu Glu Trp Ala Pro Gln Tyr Asn Leu Lys Glu Asn Leu Leu
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Pro Asp Thr Val Ser Gly Ile Met Leu Ala Val Gln Gln Val Ala Gln
50          55          60

Gly Leu Ser Phe Ala Met Leu Ser Ser Val His Pro Val Phe Gly Leu
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Tyr Gly Ser Leu Phe Pro Ala Ile Ile Tyr Ala Ile Phe Gly Met Gly
85          90          95

Arg His Val Ala Thr Gly Thr Phe Ala Leu Thr Ser Leu Ile Ser Ala
100         105         110

Asn Ala Val Glu Arg Leu Val Pro Gln Ser Ser Arg Asn Leu Thr Thr
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Gln Ser Asn Ser Ser Val Leu Gly Leu Ser Glu Phe Glu Leu Gln Arg
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Ile Gly Val Ala Ala Ala Val Ser Phe Leu Gly Gly Val Ile Gln Leu
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Val Met Phe Val Leu Gln Leu Gly Ser Ala Thr Phe Leu Leu Thr Glu
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Pro Val Ile Ser Ala Met Thr Thr Gly Ala Ala Thr His Val Val Thr
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Val Gly Glu Lys Leu Arg Asn Ala Phe Arg Cys Ser Ser Ala Lys Ile
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Lys Ala Val Val Phe Gly Leu Leu Pro Val Leu Ser Trp Leu Pro Lys
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Tyr Lys Ile Lys Asp Tyr Ile Ile Pro Asp Leu Leu Gly Gly Leu Ser
65          70          75          80

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 Thr Tyr Phe Phe Leu Gly Gly Val His Gln Met Val Pro Gly Thr Phe  
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 Glu Ser Lys Phe Gln Val Phe Asn Asn Ala Thr Asn Glu Ser Tyr Val  
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 Asp Thr Ala Ala Met Glu Ala Glu Arg Leu His Val Ser Ala Thr Leu  
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 Ala Cys Leu Thr Ala Ile Ile Gln Met Gly Leu Gly Phe Met Gln Phe  
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 Gly Leu Thr Ile Pro Ser Tyr Thr Gly Pro Gly Ser Ile Val Phe Thr  
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 Lys Lys Tyr His Met Gln Ile Val Gly Glu Ile Gln Arg Gly Phe Pro  
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Lys Ala Val Val Phe Gly Leu Leu Pro Val Leu Ser Trp Leu Pro Lys
50          55          60
Tyr Lys Ile Lys Asp Tyr Ile Ile Pro Asp Leu Leu Gly Gly Leu Ser
65          70          75          80
Gly Gly Ser Ile Gln Val Pro Gln Gly Met Ala Phe Ala Leu Leu Ala
85          90          95
Asn Leu Pro Ala Val Asn Gly Leu Tyr Ser Ser Phe Phe Pro Leu Leu
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Thr Tyr Phe Phe Leu Gly Gly Val His Gln Met Val Pro Gly Thr Phe
115         120         125
Ala Val Ile Ser Ile Leu Val Gly Asn Ile Cys Leu Gln Leu Ala Pro
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Asp Thr Ala Ala Met Glu Ala Glu Arg Leu His Val Ser Ala Thr Leu
165         170         175
Ala Cys Leu Thr Ala Ile Ile Gln Met Gly Leu Gly Phe Met Gln Phe
180         185         190
Gly Phe Val Ala Ile Tyr Leu Ser Glu Ser Phe Ile Arg Gly Phe Met
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Thr Ala Ala Gly Leu Gln Ile Leu Ile Ser Val Leu Lys Tyr Ile Phe
210         215         220

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 Lys Lys Tyr His Met Gln Ile Val Gly Glu Ile Gln Arg Gly Phe Pro  
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 Thr Pro Val Ser Pro Val Val Ser Gln Trp Lys Asp Met Ile Gly Thr  
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Val Ser Leu Gln Glu Leu Gln Gln Asp Phe Glu Asn Ala Pro Pro Thr  
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&lt;211&gt; 3049

&lt;212&gt; DNA

&lt;213&gt; Mus musculus

&lt;400&gt; 9

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ccaggccccc actgctgtcc agcacttcag actctagtgt ggacagtgg 3049

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<210> 10
<211> 790
<212> PRT
<213> Mus musculus
<400> 10

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Met Asn Gln Pro Arg Pro Arg Tyr Val Val Asp Arg Ala Ala Tyr Ser
1          5          10          15
Leu Ser Leu Phe Asp Asp Glu Phe Glu Lys Lys Asp Arg Ala Tyr Pro
20          25          30
Val Gly Glu Lys Leu Arg Asn Thr Phe Arg Cys Ser Ser Ala Lys Phe
35          40          45
Lys Ala Phe Val Phe Gly Leu Leu Pro Val Leu Ser Trp Leu Pro Lys
50          55          60
Tyr Lys Ile Lys Asp Tyr Ile Ile Pro Asp Leu Leu Gly Gly Leu Ser
65          70          75          80
Gly Gly Cys Ile Gln Val Pro Gln Gly Met Ala Phe Ala Leu Leu Ala
85          90          95
Asn Leu Pro Ala Val Asn Gly Leu Tyr Ser Ser Phe Phe Pro Leu Leu
100         105         110
Thr Tyr Phe Phe Leu Gly Gly Ile His Gln Met Val Pro Gly Thr Phe
115        120        125
Ala Val Ile Ser Ile Leu Val Gly Asn Ile Cys Leu Gln Leu Ala Pro
130        135        140
Glu Ser Lys Phe Gln Ile Phe Asn Asn Val Thr Asn Glu Thr Tyr Val
145        150        155        160
Asp Thr Ala Ala Met Glu Ala Glu Arg Leu His Val Ser Ala Thr Leu
165        170        175

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Ala Cys Leu Thr Ala Val Ile Gln Met Ala Leu Gly Phe Met Gln Phe  
 180 185 190  
 Gly Phe Val Ala Ile Tyr Leu Ser Glu Ser Phe Ile Arg Gly Phe Met  
 195 200 205  
 Thr Ala Ala Gly Leu Gln Ile Leu Ile Ser Val Leu Lys Tyr Ile Phe  
 210 215 220  
 Gly Leu Thr Ile Pro Ser Tyr Thr Gly Pro Gly Ser Ile Val Phe Thr  
 225 230 235 240  
 Phe Ile Asp Ile Cys Lys Asn Leu Pro His Thr Asn Ile Ala Ser Leu  
 245 250 255  
 Ile Phe Ala Leu Val Ser Gly Val Phe Leu Val Leu Val Lys Glu Leu  
 260 265 270  
 Asn Ala Arg Tyr Met His Lys Ile His Phe Pro Ile Pro Thr Glu Met  
 275 280 285  
 Ile Val Val Val Val Ala Thr Ala Ile Ser Gly Ser Cys Lys Met Pro  
 290 295 300  
 Lys Lys Tyr His Met Gln Ile Val Gly Glu Ile Arg Gln Gly Phe Pro  
 305 310 315 320  
 Thr Pro Val Ala Pro Met Val Ser Gln Trp Lys Asp Met Val Gly Thr  
 325 330 335  
 Ala Phe Ser Leu Ala Ile Val Gly Tyr Val Ile Asn Leu Ala Met Gly  
 340 345 350  
 Arg Thr Leu Ala Ser Lys His Gly Tyr Asp Val Asp Ser Asn Gln Glu  
 355 360 365  
 Met Ile Ala Leu Gly Cys Ser Asn Phe Phe Gly Ser Phe Phe Lys Ile  
 370 375 380  
 His Val Ile Cys Cys Ala Leu Ser Val Thr Leu Ala Val Asp Gly Ala  
 385 390 395 400  
 Gly Gly Lys Ser Gln Val Ala Ser Leu Cys Val Ser Leu Val Val Met  
 405 410 415  
 Ile Thr Met Leu Val Leu Gly Ser Tyr Leu Tyr Pro Leu Pro Lys Ala  
 420 425 430  
 Val Leu Gly Ala Leu Ile Ala Val Asn Leu Lys Asn Ser Leu Lys Gln  
 435 440 445  
 Leu Thr Asp Pro Tyr Tyr Leu Trp Arg Lys Ser Lys Leu Asp Cys Cys  
 450 455 460  
 Val Trp Val Val Ser Phe Leu Ser Ser Phe Phe Leu Ser Leu Pro Tyr  
 465 470 475 480  
 Gly Val Ala Val Gly Val Ala Phe Ser Ile Leu Val Val Ile Phe Gln  
 485 490 495  
 Thr Gln Phe Arg Asn Gly Ser Thr Leu Ala Gln Val Met Asp Thr Asp  
 500 505 510  
 Ile Tyr Val Asn Pro Lys Thr Tyr Asn Arg Ala Gln Glu Ile Ala Gly  
 515 520 525  
 Val Lys Ile Val Thr Tyr Cys Ser Pro Leu Tyr Phe Ala Asn Ser Glu  
 530 535 540

Ile Phe Arg Gln Lys Val Ile Ala Lys Thr Gly Met Asp Pro Gln Lys  
 545 550 555 560  
 Val Leu Leu Ala Lys Gln Lys Tyr Leu Arg Lys Gln Glu Lys Arg Thr  
 565 570 575  
 Ala Ile Pro Thr Gln Gln Arg Lys Ser Leu Phe Met Lys Thr Lys Thr  
 580 585 590  
 Val Ser Leu Gln Glu Leu Gln Gln Asp Phe Glu Ser Ala Pro Ser Thr  
 595 600 605  
 Asp Pro Asn Asn Asn Gln Ala Pro Ala Ala Glu Ala His Ile Ser Tyr  
 610 615 620  
 Ile Thr Phe Ser Pro Asp Ala Ser Thr Ala Ala Ala Cys Glu Leu Pro  
 625 630 635 640  
 Ala Ser Thr Arg Ser Pro Gln Glu Ala Ser Asp Thr Leu Ala Ser Val  
 645 650 655  
 Pro Pro Phe Val Thr Phe His Thr Leu Ile Leu Asp Met Ser Gly Val  
 660 665 670  
 Ser Phe Val Asp Leu Met Gly Ile Lys Ala Leu Ala Lys Leu Ser Ser  
 675 680 685  
 Thr Tyr Glu Lys Ile Gly Val Gln Ile Phe Leu Val Asn Ile His Ala  
 690 695 700  
 Gln Val Tyr Asn Asp Ile Ser His Gly Gly Val Phe Glu Asp Gly Cys  
 705 710 715 720  
 Val Gln Arg Ser His Val Phe Pro Ser Ile His Asp Ala Val Leu Phe  
 725 730 735  
 Ala Gln Ala Asn Ala Arg Glu Ala Pro Asp Arg Asn Phe His Gly Ala  
 740 745 750  
 Pro Gly Asp Thr Glu Phe Ser Leu Tyr Asp Ser Glu Glu Glu Gly Pro  
 755 760 765  
 Ser Tyr Trp Asp Leu Glu Gln Glu Met Phe Gly Thr Met Phe His Thr  
 770 775 780  
 Glu Thr Leu Thr Ala Leu  
 785 790

<210> 11  
 <211> 8  
 <212> PRT  
 <213> Mus musculus  
 <400> 11

Gly Thr Ser Arg His Ile Ser Val  
 1 5

<210> 12  
 <211> 98  
 <212> PRT  
 <213> Mus musculus  
 <400> 12

Gly Asp Val Met Ser Gly Leu Val Ile Gly Ile Ile Leu Val Pro Gln  
 1 5 10 15

Ala Ile Ala Tyr Ser Leu Leu Ala Gly Leu Gln Pro Ile Tyr Ser Leu  
 20 25 30

Tyr Thr Ser Phe Phe Ala Asn Leu Ile Tyr Phe Leu Asn Gly Thr Ser  
           35                                  40                                  45  
 Arg His Val Asn Val Gly Ile Phe Ser Leu Leu Cys Leu Met Val Gly  
           50                                  55                                  60  
 Gln Val Val Asp Arg Glu Leu Gln Leu Ala Gly Phe Asp Pro Ser Gln  
           65                                  70                                  75                                  80  
 Asp Ser Leu Gly Pro Lys Asn Asn Asp Ser Thr Leu Asn Asn Ser Ala  
                                   85                                  90                                  95

Thr Thr

<210> 13  
 <211> 98  
 <212> PRT  
 <213> Mus musculus  
 <400> 13

Gly Asp Val Met Ser Gly Leu Ile Val Gly Ile Leu Leu Val Pro Gln  
   1                                  5                                  10                                  15  
 Ser Ile Ala Tyr Ser Leu Leu Ala Gly Gln Glu Pro Ile Tyr Gly Leu  
                                   20                                  25                                  30  
 Tyr Thr Ser Phe Phe Ala Ser Ile Ile Tyr Phe Leu Phe Gly Thr Ser  
           35                                  40                                  45  
 Arg His Ile Ser Val Gly Ile Phe Gly Ile Leu Cys Leu Met Ile Gly  
           50                                  55                                  60  
 Glu Val Val Asp Arg Glu Leu His Lys Ala Cys Pro Asp Thr Asp Ala  
           65                                  70                                  75                                  80  
 Thr Ser Ser Ser Ile Ala Val Phe Ser Ser Gly Cys Val Val Val Asn  
                                   85                                  90                                  95

His Thr

<210> 14  
 <211> 91  
 <212> PRT  
 <213> Mus musculus  
 <400> 14

Ser Asp Ile Val Ser Gly Ile Ser Thr Gly Leu Val Ala Val Leu Gln  
   1                                  5                                  10                                  15  
 Gly Leu Ala Phe Ala Leu Leu Val Asn Ile Pro Pro Ala Tyr Gly Leu  
                                   20                                  25                                  30  
 Tyr Ala Ala Phe Phe Pro Val Ile Thr Tyr Phe Phe Leu Gly Thr Ser  
           35                                  40                                  45  
 Arg His Ile Ser Val Gly Pro Phe Pro Val Leu Ser Met Met Val Gly  
           50                                  55                                  60  
 Val Val Val Thr Arg Val Val Ser Asp Pro Asn Ala Ser Ser Glu Leu  
           65                                  70                                  75                                  80  
 Ser Ser Ser Ser Thr Glu Asn Asp Ser Phe Ile  
                                   85                                  90

<210> 15  
 <211> 97  
 <212> PRT  
 <213> Mus musculus

<400> 15

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Ser Asp Ile Ile Ser Gly Val Ser Thr Gly Leu Val Gly Thr Leu Gln
1          5          10          15
Gly Met Ala Tyr Ala Leu Leu Ala Ala Val Pro Val Gln Phe Gly Leu
          20          25          30
Tyr Ser Ala Phe Phe Pro Ile Leu Thr Tyr Phe Val Phe Gly Thr Ser
          35          40          45
Arg His Ile Ser Val Gly Pro Phe Pro Val Val Ser Leu Met Val Gly
50          55          60
Ser Val Val Leu Ser Met Ala Pro Asp Asp His Phe Leu Val Pro Ser
65          70          75          80
Gly Asn Gly Ser Ala Leu Asn Ser Thr Thr Leu Asp Thr Gly Thr Arg
          85          90          95

```

Asp

<210> 16  
 <211> 91  
 <212> PRT  
 <213> Mus musculus  
 <400> 16

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Gly Asp Leu Val Ser Gly Ile Ser Thr Gly Val Leu Gln Leu Pro Gln
1          5          10          15
Gly Leu Ala Phe Ala Met Leu Ala Ala Val Pro Pro Val Phe Gly Leu
          20          25          30
Tyr Ser Ser Phe Tyr Pro Val Ile Met Tyr Cys Phe Phe Gly Thr Ser
          35          40          45
Arg His Ile Ser Ile Gly Pro Phe Ala Val Ile Ser Leu Met Ile Gly
50          55          60
Gly Val Ala Val Arg Leu Val Pro Asp Asp Ile Val Ile Pro Gly Gly
65          70          75          80
Val Asn Ala Thr Asn Gly Thr Glu Ala Arg Asp
          85          90

```

<210> 17  
 <211> 85  
 <212> PRT  
 <213> Mus musculus  
 <400> 17

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Gly Asp Leu Leu Ser Gly Leu Ser Val Ala Ile Met Gln Leu Pro Gln
1          5          10          15
Gly Leu Ala Tyr Ala Leu Leu Ala Gly Leu Pro Pro Met Phe Gly Leu
          20          25          30
Tyr Ser Ser Phe Tyr Pro Val Phe Ile Tyr Phe Leu Phe Gly Thr Ser
          35          40          45

```

Arg His Ile Ser Val Gly Thr Phe Ala Val Met Ser Val Met Val Gly  
50 55 60

Ser Val Thr Glu Ser Leu Thr Ala Asp Lys Ala Phe Val Gln Gly Leu  
65 70 75 80

Asn Ala Thr Ala Asp  
85

<210> 18  
<211> 93  
<212> PRT  
<213> Mus musculus  
<400> 18

Pro Asp Thr Val Ser Gly Ile Met Leu Ala Val Gln Gln Val Ala Gln  
1 5 10 15

Gly Leu Ser Phe Ala Met Leu Ser Ser Val His Pro Val Phe Gly Leu  
20 25 30

Tyr Gly Ser Leu Phe Pro Ala Ile Ile Tyr Ala Ile Phe Gly Met Gly  
35 40 45

Arg His Val Ala Thr Gly Thr Phe Ala Leu Thr Ser Leu Ile Ser Ala  
50 55 60

Asn Ala Val Glu Arg Leu Val Pro Gln Ser Ser Arg Asn Leu Thr Thr  
65 70 75 80

Gln Ser Asn Ser Ser Val Leu Gly Leu Ser Glu Phe Glu  
85 90

<210> 19  
<211> 97  
<212> PRT  
<213> Mus musculus  
<400> 19

Gly Asp Leu Leu Ala Gly Leu Ser Val Gly Leu Ala Gln Val Pro Gln  
1 5 10 15

Gly Leu Ile Leu Ser Leu Leu Thr Arg Gln Leu Ile Pro Pro Leu Asn  
20 25 30

Val Thr Tyr Ala Ala Phe Cys Ser Ser Val Ile Tyr Val Ile Phe Gly  
35 40 45

Ser Cys His Gln Met Ser Ile Gly Pro Phe Phe Leu Val Ser Ala Leu  
50 55 60

Met Ile Asn Val Leu Lys Asp Arg Pro Phe Asn Asn Gly His Leu Ile  
65 70 75 80

Leu Gly Thr Phe Val Lys Asp Asp Phe Ser Val Pro Thr Phe Tyr Leu  
85 90 95

Ser

<210> 20  
<211> 94  
<212> PRT  
<213> Mus musculus  
<400> 20

Pro Asp Leu Leu Gly Gly Leu Ser Gly Gly Cys Ile Gln Val Pro Gln  
1 5 10 15

Gly Met Ala Phe Ala Leu Leu Ala Asn Leu Pro Ala Val Asn Gly Leu  
20 25 30

Tyr Ser Ser Phe Phe Pro Leu Leu Thr Tyr Phe Phe Leu Gly Gly Ile  
35 40 45

His Gln Met Val Pro Gly Thr Phe Ala Val Ile Ser Ile Leu Val Gly  
50 55 60

Asn Ile Cys Leu Gln Leu Ala Pro Glu Ser Lys Phe Gln Ile Phe Asn  
65 70 75 80

Asn Val Thr Asn Glu Thr Tyr Val Asp Thr Ala Ala Met Glu  
85 90

<210> 21  
<211> 78  
<212> PRT  
<213> Mus musculus  
<400> 21

Leu Asp Phe Ile Ala Gly Leu Ser Val Gly Leu Thr Val Ile Pro Gln  
1 5 10 15

Ala Leu Ala Tyr Ala Glu Val Ala Gly Leu Pro Pro Gln Tyr Gly Leu  
20 25 30

Tyr Ser Ala Phe Met Gly Cys Phe Val Tyr Phe Phe Leu Gly Thr Ser  
35 40 45

Arg Asp Val Thr Leu Gly Pro Thr Ala Ile Met Ser Leu Leu Val Ser  
50 55 60

Phe Tyr Thr Phe Arg Glu Pro Ala Tyr Ala Val Leu Leu Ala  
65 70 75

<210> 22  
<211> 23  
<212> PRT  
<213> Homo sapiens  
<400> 22

Gly Ala Ala Ala Ala Thr Gly Ala Cys Ala Gly Gly Ala Gly Cys  
1 5 10 15

Ala Ala Ala Gly Ala Gly Gly  
20

<210> 23  
<211> 23  
<212> DNA  
<213> Homo sapiens  
<400> 23

acatagccta caagtgccac tcc

23

<210> 24  
<211> 32  
<212> DNA  
<213> Homo sapiens  
<400> 24

tagacagagc cgcatactcc cttaccctct tc

32



<210> 25  
 <211> 31  
 <212> DNA  
 <213> Homo sapiens  
 <400> 25  
 gatgtgcttg ctgacagcag tggagggttg g 31

<210> 26  
 <211> 33  
 <212> DNA  
 <213> Mus musculus  
 <400> 26  
 caaagcttgt caatgtccca gacatgaacc agc 33

<210> 27  
 <211> 36  
 <212> DNA  
 <213> Mus musculus  
 <400> 27  
 ccactgtcca cactagagtc tgaagtgtg gacagc 36

<210> 28  
 <211> 22  
 <212> DNA  
 <213> Homo sapiens  
 <400> 28  
 tgaggacttg atgaagtgat cc 22

<210> 29  
 <211> 22  
 <212> DNA  
 <213> Homo sapiens  
 <400> 29  
 atgaacaaaa ggagaatgag gc 22

<210> 30  
 <211> 21  
 <212> DNA  
 <213> Homo sapiens  
 <400> 30  
 aaagatggag gcaaagtagt g 21

<210> 31  
 <211> 18  
 <212> PRT  
 <213> Mus musculus  
 <400> 31

Lys Arg Ser Val Leu Trp Gly Lys Met His Thr Pro His Arg Glu Asp  
 1 5 10 15

Ile Lys

<210> 32  
 <211> 17  
 <212> PRT  
 <213> Mus musculus  
 <400> 32

Gln Glu Leu Gln Gln Asp Phe Glu Ser Ala Pro Ser Thr Asp Pro Asn  
 1 5 10 15

Asn

<210> 33  
<211> 20  
<212> PRT  
<213> Mus musculus

<400> 33

Lys	Gln	Lys	Tyr	Leu	Arg	Lys	Gln	Glu	Lys	Arg	Thr	Ala	Ile	Pro	Thr
1				5					10					15	

Gln	Gln	Arg	Lys
			20